Abstract

160 sedentary women (38.5±9 yr; 94.0±19 kg; 43.8±4.3 % body fat) participated in a 14-wk exercise and diet program. Subjects were randomly assigned to a control group (C), an exercise and no diet group (ND+E), an exercise and high calorie diet (2,600 kcal/d for 2 wks at 55% C, 15% P, 30% F; 8 wks at 40% C, 30% P, 30% F; 4 wks at 55% C, 15% P, 30% F) group (HCD+E), or a low calories high carbohydrate (HCHO+E), high protein (HP+E), or very high protein (VHP+E) diet. The diets involving consumed 1,200 kcal for 2 wks and 1,600 kcal for 8 wks with combined 30% fat with carbohydrate intake ranging from 40-55% on the HCD+E and HCHO+E diets and protein intake ranging from 50-63% on the HP+E and VHP+E diets. After the diet phase, subjects ingested 2,600 kcal and 1,200 kcal/d diets at 3/2, 3/2, 5/2, & 10/2 day intervals in an attempt to maintain weight loss. Subjects participated in a supervised Curves fitness program 3-4 per wk (30 min of circuit resistance training interspersed with calisthenic exercises). DEXA body composition measurements were obtained at 0, 10, and 14 weeks. Data were analyzed by repeated measures ANOVA and are presented as means ± SD changes from baseline the C, ND+E, HCD+E, HCHO+E, HP+E, and VHP+E groups, respectively. After 10 weeks, subjects who dieted experienced a greater loss in scanned body mass (0.8±2.6; -0.4±2.1; -1.1±3.1; -4±3.1; -4.1±3.7; -5.2±4.1 kg) and fat mass (0.1±2.6; -0.8±1.6; -0.5±2.0; -2.6±2.1; -2.8±2.7; -3.7±3.1 kg), intermittent dieting maintained scanned mass (0.6±3.5; -0.7±2.2; -0.9±3.0; -2.9±2.8; -2.9±3.2; -4.1±3.7 kg) and fat mass (0.4±2.7; -0.9±1.8; -0.9±3.0; -2.9±2.8; -2.9±3.2; -4.1±3.7 kg) indicating this approach appears to help maintain weight loss.

Subjects

• 160 sedentary women (38.5±9 yr; 93.2±19 kg; 44.8±4.8 % body fat) participated in a 14-wk exercise and diet program. Subjects were randomly assigned to a control group (C), an exercise and no diet group (ND+E); an exercise and high calorie diet (2,600 kcal/d for 2 wks at 55% C, 15% P, 30% F; 8 wks at 40% C, 30% P, 30% F) group (HCD+E); or, a low calories high carbohydrate (HCHO+E), high protein (HP+E), or very high protein (VHP+E) diet. The diets involving consumed 1,200 kcal for 2 wks and 1,600 kcal for 8 wks with combined 30% fat with carbohydrate intake ranging from 40-55% on the HCD+E and HCHO+E diets and protein intake ranging from 50-63% on the HP+E and VHP+E diets. After the diet phase, subjects ingested 2,600 kcal and 1,200 kcal/d diets at 3/2, 3/2, 5/2, & 10/2 day intervals in an attempt to maintain weight loss. Subjects participated in a supervised Curves fitness program 3-4 per wk (30 min of circuit resistance training interspersed with calisthenic exercises). DEXA body composition measurements were obtained at 0, 10, and 14 weeks. Data were analyzed by repeated measures ANOVA and are presented as means ± SD changes from baseline the C, ND+E, HCD+E, HCHO+E, HP+E, and VHP+E groups, respectively. After 10 weeks, subjects who dieted experienced a greater loss in scanned body mass (0.8±2.6; -0.4±2.1; -1.1±3.1; -4±3.1; -4.1±3.7; -5.2±4.1 kg) and fat mass (0.1±2.6; -0.8±1.6; -0.5±2.0; -2.6±2.1; -2.8±2.7; -3.7±3.1 kg), intermittent dieting maintained scanned mass (0.6±3.5; -0.7±2.2; -0.9±3.0; -2.9±2.8; -2.9±3.2; -4.1±3.7 kg) and fat mass (0.4±2.7; -0.9±1.8; -0.9±3.0; -2.9±2.8; -2.9±3.2; -4.1±3.7 kg) indicating this approach appears to help maintain weight loss.

Methods & Procedures

• DEXA body composition measurements were obtained at 0, 10, 14 weeks.
• DEXA scans were completed using a Hologic QDR-4500W using software version 4.0.
• Interpretations of total scanned body mass, fat mass, lean mass, and percent body fat were obtained from these measures.

Conclusion

The Curves fitness and weight loss program increases weight loss in all groups, especially those following diet plans.

Funding

Supported by the Exercise & Sports Nutrition Laboratory, Baylor University and Curves International, Inc. (Waco, TX).
Dieting typically decreases resting energy expenditure (REE) contributing to weight regain after weight loss. 160 sedentary women were assigned to a control group (C), an exercise & no diet group (E+ND); an exercise & high calorie diet (HCD) group (2,600 kcal/d for 2 wks at 55% C, 15% P, 30% F; 8 wks at 40% C, 63% P, 30% F; 4 wks at 55% C, 15% P, 30% F; & 10/2 day intervals during a maintenance phase. Subjects participated in a supervised Curves fitness program 3-6 days per wk. Fasting REE measurements were obtained at 0, 2, 10, and 14 weeks. Data were analyzed by repeated measures ANOVA and are presented as means ±SD changes from baseline for the C, E+ND, HCD+E, HCHO+E, HP+E and VHP+E groups, respectively. After 2 wks, REE generally decreased in all groups except the HCD group (-1.4±2.4; -0.6±2.5; 2.6±2.6; -0.7±2.0; 0.3±3.0; -1.1±2.4 kcal/d/kg; mean 0.4±2.6). After 10 wks, REE increased by 1.2±2.7 kcal/d/kg (0.1±3.1; 1.0±1.1; 4.8±3.1; 2.0±2.6; 2.1±5.5; 0.9±2.3 kcal/d/kg; mean 1.7±3.5). Results indicate that the increases in REE observed appears to play a role in promoting and/or maintaining weight loss in women participating in this exercise and diet program.

Supported in part by Curves International, Inc., Waco, TX.

Rationale

The Curves International fitness and weight loss program has become a very popular means of promoting health and fitness among women. The program involves a 30-minute circuit training program and a weight management program involving periods of moderate caloric restriction (1,200 to 1,600 calories per day) followed by short periods of higher caloric intake (2,600 calories per day). The program is designed to promote a gradual reduction in body fat while increasing strength and muscle mass. Additionally, the program claims to promote increases in resting metabolic rate through alterations in diet and caloric intake thereby helping promote and maintain weight loss. Although the program has been based on sound scientific rationale, the effects of women following this program have not been studied in detail. The purpose of this study is to examine the acute and chronic effects of Curves International fitness and diet program on weight loss and resting energy expenditure in sedentary overweight females.

Abstract

**Subjects**

- 160 sedentary women (38.7±8 yr; 93.2±19 kg; 44.8±4.8 % body fat) participated in a 14-wk exercise and diet program.
- Subjects were informed as to the experimental procedures, and signed informed consent statements in adherence with the human subject guidelines of Baylor University.

**Experimental Design**

**Diet Protocol**

- Based on baseline testing, subjects were randomly assigned to:
  - an exercise and no diet group (E+ND);
  - an exercise and high calorie mixed diet (2,600 kcal/d for 2 wks at 55% C, 15% P, 30% F; 8 wks at 40% C, 63% P, 30% F; 4 wks at 55% C, 15% P, 30% F) group (HCD+E);
  - a low calorie high carbohydrate diet (HCHO+E);
  - a low calorie high protein (HP+E) group;
  - a low calorie very high protein (VHP+E) diet.

- The diets involved consuming 1,200 kcal for 2-wks and 1,500 kcal for 8 wks. Subjects then ingested 2,600 kcal for 10 wks and 1,500 kcal at 3/2, 3/2, 5/2, & 10/0 day intervals in an attempt to maintain weight loss and REE.
- Diets were standardized with 30% distal fat with carbohydrate intake ranging from 40-55% on the HCD+E and HCHO+E diets and protein intake ranging from 50-65% on the HP+E and VHP+E.

**Training Protocol**

- Subjects participated in a supervised 30-min hydraulic resistance training circuit program that was interspersed with calisthenic exercises and strength training 3-d per week.

**Methods & Procedures**

- Body weight, DEXA body composition, and REE measurements were obtained at 0, 2, 10, 10.4 & 14 weeks.
- REE was measured via Parvo Medics TrueOne® 2400 Metabolic Measurement System Version 4.1 following standard procedures.

Results

**Significant interactions (p<0.001) were observed among groups in absolute and relative REE.**

- After 2 wks, REE generally decreased in all groups except the HCD+E group (-1.4±2.4; -0.6±2.5; 2.6±2.6; -0.7±2.0; 0.3±3.0; -1.1±2.4 kcal/d/kg; mean 0.4±2.6).
- After 10 wks, REE increased by 1.2±2.7 kcal/d/kg (0.1±3.1; 1.0±1.1; 4.8±3.1; 2.0±2.6; 2.1±5.5; 0.9±2.3 kcal/d/kg; mean 1.7±3.5).

**Conclusions**

- Results indicate that the increases in REE observed appears to play a role in promoting and/or maintaining weight loss in women participating in the Curves exercise and diet program.
- These findings indicate that this program appears to be an effective and appropriate level exercise program for this population.

**Funding**

Supported by the Exercise & Sports Nutrition Laboratory, Baylor University and Curves International Inc., Waco, TX.
Abstract

**Experimental Design**

**Subjects**
- 160 sedentary women (38.5±9 yr; 94.0±19 kg; 43.8±4.3 % body fat) participated in a 14-wk exercise and diet program. Subjects were randomly assigned to a control group, an exercise and no diet group, an exercise and high calorie diet group consuming 1,200 kcal/d for 2-wks and 1,600 kcal/d for 8-wks, respectively.
- Training significantly increased relative bench press (18.5±34%); leg press (19.1±25%), BP lifting volume (33.7±85%); and LP lifting volume (40.6±87%) compared to control group values of 5.0±14%, 9.4±20%, 10±34%, and 7.7±32% respectively.

**Diet Protocol**
- Based on baseline testing, subjects were randomly assigned to one of the following groups: 
  - an exercise and no diet group (ND+E); 
  - an exercise and high calorie diet group (HCD+E); 
  - a low calorie high carbohydrate group (LC-HCHO+E); 
  - a high protein group (LC-HP+E); or, 
  - a very high protein (LC-VHP+E) diet group.
- The diets involved consuming 1,200 kcal/d for 2-weeks and 1,600 kcal/d for 8 weeks. Subjects then ingested 2,600 kcal/d and 1,200 kcal diet at 3/2, 3/2, 5/2, & 10/0 day intervals in an attempt to maintain weight loss and REE.
- Diets were standardized with 30% dietary fat with 30% carbohydrate, 30% fat and 30% protein and weight loss was 1.5% weekly.

**Training**
- Subjects participated in a supervised 30-min resistance training circuit program that was interspersed with calisthenic exercises and performed 3-d per week.

**Results**

- After 14 weeks, subjects experienced significant (p<0.001) increases in relative 1RM bench press (18.5±34%); 1RM leg press (19.1±25%), BP lifting volume (33.7±85%); and, LP lifting volume (40.6±87%) compared to control group values of 5.0±14%, 9.4±20%, 10±34%, and 7.7±32% respectively.
- No significant differences were observed among groups.
- Training also significantly increased relative peak oxygen uptake (14.4±48%, p<0.04) with a significantly greater gain (p<0.05) observed in the VHP diet group (32.5±78%) compared to a control value of 1.9±17%.
- Resting HR (-3.3±17%, p=0.03), SBP (-2.8±10%, p=0.04), DBP (-3.6±12%, p<0.02), MAP (-3.4±10%, p<0.007), and RPP (5.8±21%, p<0.005) decreased in response to training with no differences observed among groups.

**Conclusions**

- The Curves fitness and weight loss program appears to increase muscular strength, muscular endurance, and aerobic capacity in this population of subjects.
- The Curves fitness and weight loss program appears to decreases resting cardiovascular hemodynamics in this population of subjects.

**Funding**

Supported by the Exercise & Sport Nutrition Laboratory, Baylor University and Curves International, Inc.

**Rationale**

The Curves fitness and weight loss program has become a very popular means of promoting health and fitness among women. The program involves a 30-minute circuit training program and a weight management program involving periods of moderate caloric restriction (1,200 to 1,600 calories per day) followed by short periods of higher caloric intake (2,600 calories per day). The program is designed to promote a gradual reduction in body fat while increasing strength and fitness. Although the program has been based on sound rationale, the effects of following this program have not been studied. The purpose of this study is to examine the acute and chronic effects of Curves International fitness and diet program on muscular strength, muscular endurance, aerobic capacity, and resting cardiovascular hemodynamic variables in sedentary overweight females.

**Methods & Procedures**

- 1RM bench press. 1RM leg press. BP lifting volume, LP lifting volume, VO2max and resting hemodynamic variables were obtained at 0, 10, & 14 weeks using standard procedures.

**Statistical Analysis**

- Data were analyzed by repeated measures ANOVA analysis using SPSS for Windows version 11.5 software (Chicago, IL) and are presented as means ± SD from baseline for each diet group.
The Curves International fitness and weight loss program has become a very popular means of promoting health and fitness among women. The program involves a 30-minute circuit training program and a weight management program involving periods of moderate caloric restriction (1,200 to 1,600 calories per day) followed by short periods of higher caloric intake (2,000 calories per day). The program is designed to promote a gradual reduction in body fat while preserving lean body mass/muscle mass. Although the program has been based on sound scientific rationale, the effects of women following this program have not been studied in detail. The purpose of this study is to examine the acute and chronic effects of Curves International fitness and diet program on general markers of health in sedentary overweight females.

**EFFECTS OF THE CURVES™ FITNESS AND WEIGHT LOSS PROGRAM IV: HEALTH MARKERS**


Exercise & Sport Nutrition Lab, Baylor University, P.O. Box 97313, Waco, TX 76798-7313

**Abstract**

**PURPOSE:** The Curves fitness and diet program has become very popular among adult women with over 2 million women currently participating in the program. However, the efficacy of this program has yet to be examined. This study examined the effects of Curves fitness and diet program on general markers of health.

**METHODS:** 154 sedentary women (38.7±8 yr; 93.2±19 kg; 47.4±8.5 % body fat) participated in a 14-week exercise and diet program. Based on baseline testing, subjects were randomly assigned to an exercise and no diet group (ND+E); an exercise and high protein diet (2,600 kcal diet for 2 wks at 55% C, 15% P, 30% F; 8 wks at 40% C, 30% P, 30% F; 4 wks at 55% C, 15% P, 30% F) group (HCD+E); or a low calorie high carbohydrate (LC-HCHO+E), high protein (LC-HP+E), or very high protein (LC-VHP+E) diet group. The diets involved consuming 1,200 kcal diet for 2 wks and 1,600 kcal diet for 8 wks. Subjects then ingested 2,600 kcal diet and 1,200 kcal diet at 3/2, 3/2, 5/2, & 10/1 day intervals in an attempt to maintain weight loss and REE. Diets were standardized with 30% energy as carbohydrate intake ranging from 40-50% on the HCD+E and LC-HCHO+E diet groups and 30% to 40% in the LC-HP+E and LC-VHP+E diet groups. Subjects participated in a supervised 30-min resistance training circuit program that was interspersed with calisthenics and performed 3-d per week. At 0, 2, 10, 14, and 2 weeks, subjects donated fasting blood samples and had waist and hip measurements performed. Subjects were also questioned about side effects on a weekly basis. Hematological variables were measured to assess the lipid blood profiles. Data were analyzed by repeated measures ANOVA using SPSS for Windows version 11.5 software (Chicago, IL) and are presented as means ± SD from baseline for each diet group at week 2, 10, 14, and 14 of the study, respectively.

**Rationale**

The Curves International fitness and weight loss program has become very popular among adult women with over 2 million women currently participating in the program. However, the efficacy of this program has yet to be examined. This study examined the effects of Curves International fitness and diet program on general markers of health in sedentary overweight females.

**Experimental Design**

**Subjects**

- 154 sedentary women (38.7±8 yr; 93.2±19 kg; 47.4±8.5 % body fat) participated in a 14-week exercise and diet program. Based on baseline testing, subjects were randomly assigned to an exercise and no diet group (ND+E); an exercise and high protein diet (2,600 kcal diet for 2 wks at 55% C, 15% P, 30% F; 8 wks at 40% C, 30% P, 30% F; 4 wks at 55% C, 15% P, 30% F) group (HCD+E); or a low calorie high carbohydrate (LC-HCHO+E), high protein (LC-HP+E), or very high protein (LC-VHP+E) diet group. The diets involved consuming 1,200 kcal diet for 2 wks and 1,600 kcal diet for 8 wks. Subjects then ingested 2,600 kcal diet and 1,200 kcal diet at 3/2, 3/2, 5/2, & 10/1 day intervals in an attempt to maintain weight loss and REE. Diets were standardized with 30% energy as carbohydrate intake ranging from 40-50% on the HCD+E and LC-HCHO+E diet groups and 30% to 40% in the LC-HP+E and LC-VHP+E diet groups. Subjects participated in a supervised 30-min resistance training circuit program that was interspersed with calisthenics and performed 3-d per week. At 0, 2, 10, 14, and 2 weeks, subjects donated fasting blood samples and had waist and hip measurements performed. Subjects were also questioned about side effects on a weekly basis. Hematological variables were measured to assess the lipid blood profiles. Data were analyzed by repeated measures ANOVA using SPSS for Windows version 11.5 software (Chicago, IL) and are presented as means ± SD from baseline for each diet group at week 2, 10, 14, and 14 of the study, respectively.

**Diet Protocol**

- Based on baseline testing, subjects were randomly assigned to:
  - an exercise and no diet group (ND+E);
  - an exercise and high protein diet (2,600 kcal diet for 2 wks at 55% C, 15% P, 30% F; 8 wks at 40% C, 30% P, 30% F; 4 wks at 55% C, 15% P, 30% F) group (HCD+E);
  - a low calorie high carbohydrate (LC-HCHO+E) diet group;
  - a low calorie high protein (LC-HP+E) diet group;
  - a low calorie very high protein (LC-VHP+E) diet group.

**Training Protocol**

- Subjects participated in a supervised 30-min resistance training circuit program that was interspersed with calisthenic exercises and performed 3-d per week.

**Results**

- Total cholesterol (-8.5±12; -4.5±12; -5.0±12; -1.6±13%) significantly decreased during the study with no significant differences observed among groups. Subjects experienced a significant decrease in waist (-4.5±12; -5.0±12; -1.6±13%) which served to decrease the overall ratio for this age group from 0.84±0.09 (Very High Risk) to 0.81±0.05 (High Risk). Although some hematological variables decreased over time, there were no clinically significant interactions observed in remaining hematological markers or in weekly follow-up reports. Subjects reported any side effects associated with participating in the study to a research nurse on a weekly basis.

**Conclusions**

- The Curves fitness and weight loss program promotes improvements in blood lipid profiles and decreases the ratio of waist to hip ratio (p<0.05).
- Participation in this program does not appear to adversely affect general markers of clinical health status.

**Funding**

Supported by the Exercise & Sport Nutrition Laboratory, Baylor University and Curves International Inc., Waco, TX www3.baylor.edu/HHPR/ESNL
This study examined whether weight loss induced by diet and/or exercise influences leptin. 153 sedentary women participated in the 14-wk Curves exercise and diet program described above while 7 subjects served as controls. Fasting blood samples were obtained 0, 2, 10, 10.4, and 14 wks for exercise and diet groups as well as at 0, 10, and 14 wks for controls. Data were analyzed by repeated measures ANOVA and Pearson correlation analysis. Data are presented as means ± SD changes from baseline for each diet group.

**Abstract**

**Subjects**
- 153 sedentary women (38.4±8 yr; 94.3±19 kg; 164.3±3 cm; 43.8±4.3 % body fat) participated in a 14-wk exercise and diet program.
- Subjects were informed as to the experimental procedures and signed informed consent statements in adherence with the human subject guidelines of Baylor University.

**Diet Protocol**
- Based on baseline testing, subjects were randomly assigned to one of the following groups:
  - an exercise and no diet group (ND+E);
  - an exercise and high calorie mixed diet group (2,600 kcal/d for 2 wks; 4000 kcal for 8 wks; 2,600 kcal/d for 2 wks at 55% C, 15% P, 30% F; 8 wks at 55% C, 30% P, 30% F; 4 wks at 55% C, 15% P, 30% F). No significant differences were observed among exercise and diet groups (p=0.16). However, when control group data were included in the analysis, a significant interaction was observed (p=0.001). The diets are described above while 7 subjects served as controls. Fasting blood samples were obtained 0, 2, 10, 10.4, and 14 wks for each diet group.
- The diets involved consuming 1,200 kcal/d for 2-wks and 1,600 kcal/d for 8 wks. Subjects then ingested 2,600 kcal/d and 1,200 kcal diet at 3/2, 3/2, 5/2, & 10/0 day intervals in an attempt to maintain weight loss and REE.

**Training Protocol**
- Subjects participated in a supervised 30-min resistance training program that was interspersed with calisthenic exercises and performed 3-d per week.

**Methods & Procedures**
- At 0, 2, 10, 10.4, and 14-wks, subjects donated fasting blood samples.
- Plasma samples were analyzed for leptin via Enzyme-Linked Immunosorbent Assay from Diagnostic Systems Laboratories, Inc. (Webster, TX) on a Wallac Victor 2 1420 multilabel counter manufactured by PerkinElmer Life Sciences (Wellesley, MA).

**Results**
- No significant differences were observed among exercise and diet groups (p=0.16).
- When control group data were included in the analysis, a significant interaction was observed (p=0.001) with leptin levels in the ND+E, LC-HCHO+E, LC-HP+E, and LC-VHP+E lower than C values at 10 wks (17.4±31; -13.0±24; -22.4±32; -27.9±31; -14.4±25 %) and 14 wks (29.4±35; -8.6±23; -10.8±22; -19.7±29; -12.8±34 %).
- Leptin levels were significantly correlated (p<0.05) with body mass, fat mass, and body fat at each data point with stronger relationships observed as the study progressed.

**Conclusions**
- Results indicate that the Curves fitness and diet program decreases leptin levels and that changes are correlated with weight loss.

**Funding**
- Supported by the Exercise & Sports Nutrition Laboratory, Baylor University and Curves International Inc., Waco, TX www3.baylor.edu/HHPR/ESNL

**Rationale**
- The Curves International fitness and weight loss program has become a very popular means of promoting health and fitness among women. The program involves a 30-minute circuit training program and a weight management program involving periods of moderate caloric restriction (1,600 to 1,200 calories per day) followed by short periods of higher caloric intake (2,600 calories per day). The program is designed to promote a gradual reduction in body fat while increasing strength and muscle mass/tone. Although the program has been based on sound scientific rationale, the effects of women following this program have not been studied in detail. The purpose of this study is to examine whether weight loss induced Curves International fitness and diet program influences leptin production in sedentary overweight females.
EFFECTS OF THE CURVES™ FITNESS & WEIGHT LOSS PROGRAM VI: INSULIN SENSITIVITY


Exercise & Sport Nutrition Lab, Baylor University, P.O. Box 97313, Waco, TX 76798-7313

Abstract

Insulin resistance has been suggested to play a role in obesity. This study examined whether weight loss induced by diet and/or exercise influences insulin sensitivity. 153 sedentary women participated in the Curves 14-wk exercise and diet program while 7 subjects served as controls. Fasting blood samples were collected at 0, 2, 10, 10.4, and 14 wks for exercise and diet groups as well as at 0, 10, and 14 wks for controls. Data were analyzed by repeated measures ANOVA and Pearson product correlation analysis. Data are presented as means ± SD changes from baseline for all groups.

Subjects

- 153 sedentary women (38.8±4 yr; 94.3±19 kg; 164.3±3 cm; 43.8±4 % body fat) participated in a 14-wk exercise and diet program.
- Subjects were informed as to the experimental procedures and signed informed consent statements in adherence with the human subject guidelines of Baylor University.

Diet Protocol

- Based on baseline testing, subjects were randomly assigned to:
  - an exercise and no diet group (ND+E);
  - an exercise and high calorie mixed diet (2,600 kcal/d for 2 wks at 65% C, 15% P, 30% F, 6 wks at 40% C, 30% P, 30% F; 4 wks at 65% C, 15% P, 30% F) group (HCD+E);
  - a low calorie high carbohydrate group (LC-HCHO+E);
  - a low calorie high protein group (LC-HP+E); or,
  - a low calorie very high protein (LC-VHP+E) diet.

- The diets consumed 1,200 kcal/d for 2 wks and 1,600 kcal/d for 8 wks. Subjects then ingested 2,600 kcal/d and 1,200 kcal diet at 3/2, 3/2, 5/2, & 10/0 day intervals in an attempt to maintain weight loss and REE.

- Diets were standardized with 30% dietary fat with carbohydrate intake ranging from 40-55% on the LC-HCHO+E and LC-HP+E diets and protein intake ranging from 50-63% on the LC-HP+E and LC-VHP+E.

Training Protocol

- Subjects participated in a supervised 30-min resistance training circuit program that was interspersed with calisthenic exercises and performed 3-d per week.

Methods & Procedures

- At 0, 2, 10, 10.4, and 14-weeks, subjects donated fasting blood samples.

- Plasma samples were analyzed for insulin via Enzyme-Linked Immunosorbert Assay from Diagnostic Systems Laboratories, Inc. (Webster, TX) on a Wallac Victor 1420 Multilabel Counter manufactured by PerkinElmer Life Sciences (Wellesley, MA).

- Fasting glucose samples were analyzed by Quest Diagnostics, Inc. (Dallas, TX).

- Insulin sensitivity was calculated as the ratio of fasting glucose / insulin as well as calculating the homeostatic glucose insulin ratio (Fasting Insulin x Fasting Glucose / 405).

Results

- Exercise and diet significantly decreased fasting glucose levels with no significant differences observed among groups.
- No significant time or group x time interaction effects were observed among groups in fasting insulin, glucose/insulin ratio, or homeostatic glucose/insulin ratio.
- Insulin levels were significantly correlated with changes in body mass, fat mass, and body fat.
- The glucose/insulin ratio and homeostatic glucose/insulin ratio were not significantly correlated to body composition changes.

Conclusions

Subjects participating in the Curves fitness and weight loss program experience weight loss and reductions in blood glucose with no apparent effects on insulin sensitivity.

Funding

Supported by the Exercise & Sport Nutrition Laboratory, Baylor University and Curves International Inc., Waco, TX

www3.baylor.edu/HHPR/ESNL
EFFECTS OF THE CURVES™ FITNESS AND WEIGHT LOSS PROGRAM VII: QUALITY OF LIFE

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Abstract
141 sedentary women participated in a 14-wk exercise and diet program. Participants were randomized to an exercise and no diet group, an exercise and high calorie diet group, or one of three low calorie diets (HCHO: HP, and VH) that involved consuming 1,200 kcal/d for 2 weeks and 1,600 kcal/d for 8 wks. Participants then ingested 2,600 kcal/d and 1,200 kcal diets at 3/2, 3/2, 5/2, & 10/2 day intervals in an attempt to maintain weight loss. Participants participated in a supervised Curves fitness program 3 days that involved circuit of resistance training and calisthenic exercises. The SF-36 Quality of Life (QOL) inventory was administered at 0, 10, and 14 wks. Data were analyzed by repeated measures ANOVA and Pearson product correlation analysis. Data are presented as means ± SD changes from baseline for 10 and 14 wks. Results revealed that physical functioning (8.3±14; 8.4±15), bodily pain (6.1±14; 4.9±15), general health (8.3±14; 8.4±15), vitality (11.2±15; 11.9±14), and mental health (8.3±14; 7.3±14) scores significantly increased. Role emotional scores (-13.2±43; -16.5±44) were significantly decreased while social functioning scores were unchanged. Changes in body composition were not significantly correlated with changes in body weight, body composition, strength, or aerobic fitness. These findings indicate that the Curves fitness and weight loss program can improve markers of QOL but that changes are not related to changes in body composition or fitness.

Introduction
Health-related quality of life (HRQOL) has recently been used as an outcome measure in clinical weight loss trials with some clinical studies using this measure as the primary outcome (Kolotkin and Crosby, 2002). The present study used the SF-36 as the HRQOL outcome measure. The SF-36 is a common measure of HRQOL that covers 40 concepts related to health and was developed and used in the Medical Outcomes Survey. The SF-36 is a generic instrument which measures HRQOL by assessing eight different dimensions: physical functioning (10 items), role limitations caused by physical health problems (4 items), bodily pain (2 items), general health perceptions (6 items), energy/fatigue (4 items), social function (2 items), role limitation caused by emotional problems (3 items), and emotional well-being (5 items). The items are scored, with the higher score representing better HRQOL. Validity and reliability has been demonstrated in weight loss studies. Overweight is a serious public health issue in the United States which can lead to problems in physical functioning, psychosocial functioning and increases in healthcare expenditures. Little research has addressed the issue of weight loss and its corresponding impact on HRQOL. Additionally, HRQOL in overweight subjects is not as well documented as disease outcomes in these individuals (Foltini et al., 1999).

Overweight has been associated with adverse affects on HRQOL in a recent study (Fontaine et al., 1999). Fontaine et al. (1999) found obese persons seeking university-based treatment for overweight reported significant decrements in all domains of HRQOL. When compared to norms for the general population. Fontaine et al. reported in their study that weight loss in mild-to-moderately overweight persons may be associated with an improvement in HRQOL. The greatest benefits were reported in the vitality, general health perception and role-physical domain. Kushner and Foster (2000) discovered that dissatisfaction with quality of life is one of the major reasons individuals seek medical attention for obesity. The purpose of this study was to examine the acute and chronic effects of Curves International fitness and diet program on weight loss, body composition, metabolism, exercise capacity, and HRQOL in sedentary overweight females.

Experimental Design

Subjects
- 141 sedentary women participated in a 14-wk exercise and diet program
- Subjects were informed as to the experimental procedures and signed informed consent statements in adherence with the human subjects guidelines with Baylor University

Diet Protocol
- Based on baseline testing, subjects were randomly assigned to:
  - An exercise and no diet group
  - An exercise and high calorie mixed diet (2,600 kcal/d for 2 wks at 50% C, 15% P, 30% F; 8 wks at 40% C, 30% P, 30% F; 4 wks at 55% C, 15% P, 30% F) group
  - A low carbohydrate high protein group
  - A low calorie high protein group
  - A low calorie very high protein diet
- The diet involved consuming 1,200 kcal for 2 wks and 1,600 kcal for 8 wks. Subjects then ingested 2,600 kcal and 1,200 kcal at 3/2, 3/2, 5/2, & 10/0 day intervals in an attempt to maintain weight loss and resting energy expenditure (REE)

Training Protocol
- Subjects participated in a supervised 30-min hydraulic resistance training circuit program that was interspersed with calisthenic exercises and performed 3-d per week.

Results
- The following variables increased significantly:
  - Physical functioning (6.7±22; 9.3±19) scores
  - Bodily pain (6.1±23; 4.6±26) scores
  - General health (8.3±14; 8.4±15) scores
  - Vitality (11.2±15; 11.9±14) scores
  - Mental health (8.3±14; 8.3±14) scores
  - Role emotional (-13.2±43; -16.5±44) scores decreased
  - Social functioning scores were unchanged

The changes observed were not significantly correlated with changes in body weight, body composition, strength, or aerobic fitness.

Conclusions
These findings indicate that the Curves fitness and weight loss program can improve markers of QOL but that changes are not related to changes in body composition or fitness. Exercise and dietary changes may be enough to improve the subjective quality of life of the participants. Though these findings support previous published work, it may in fact demonstrate improvements in HRQOL can occur due to behavior change rather than physiological change.

Funding
Supported by the Exercise & Sport Nutrition Laboratory, Baylor University, and Curves International Inc., Waco, TX

http://www3.baylor.edu/HHPR/ESNL

Brief Methods
Participants completed the SF-36 questionnaire at 0, 10, and 14 wks of the study.

Statistical Analysis
Data was analyzed using group x time repeated measures analysis of variance (ANOVA) with SPSS for Windows Version 11 (SPSS Inc., Chicago, IL).

Graphs
Graphs were created using Excel 2000

Tables
- Table 1: Baseline characteristics of the participants
- Table 2: Comparison of baseline characteristics and intervention effects on SF-36 subscales

References
151 women participated in a 14-wk exercise and diet program. Subjects were assigned to an exercise and no diet group, an exercise and high caloric diet group, or one of three low caloric diet groups that involved consuming 1,200 kcal for 2 wks and 1,600 kcal for 6 wks. Subjects then ingested 2,600 kcal and 1,200 kcal diets at 3/2, 3/2, 5/2 & 10/2 day intervals to maintain weight loss. Subjects participated in a supervised Curves fitness program 3 d/wk. Body composition, the Social Physique Anxiety (SPA) scale, a Rosenberg self-esteem scale (RSE), and a Cash Body Image Questionnaire were obtained at 0, 10, and 14 wks. Data were analyzed by repeated measures ANOVA and Pearson product correlation analysis. Data are presented as means ± SD changes from baseline for 10 and 14 wks, respectively. Results revealed that appearance evaluation (AE) 28.2±34; 28.2±38 %), body area satisfaction (BAS) 4.7±28; 5.5±34 %), and overweight preoccupation (OP) 20.1±31; 17.8±34 %) significantly increased during the study while appearance orientation (AO), RSE, Self-Classified Weight (SCW), and SPA scores were unchanged. Changes in fat positively correlated with SCW and negatively correlated with BAS while changes in percent body fat positively correlated with SPA and SCW while negatively correlating with AE and BAS. Results indicate that the Curves program improves some aspects of body image and that changes are correlated with body composition alterations.

Introduction

Body image can be defined as “an individual’s appraisal of and feelings about the body and its function” (Cornwell & Schmitt, 1995). It is a standard that influences the way people feel about themselves, the activities they engage in, and their perception about the future (O’Brien, 1980). While body image can affect people in daily life, it is not static—it changes as a result of age, behavioral experiences, physical appearance, societal norms and the reactions of other people (Pruziensky & Cash, 1990; O’Brien, 1980). Social physique anxiety (SPA), closely associated with body image, has been identified as the anxiety individuals experience in response to others’ evaluation of their physique (Hart, Leary, & Rejeski, 1989). Both body image perception and SPA have been shown to be associated with self-esteem in some populations.

With the rise of obesity in the United States, many individuals are facing issues related to body image and choosing to engage in weight loss programs in order to reduce body size. The Curves Program for Women is one such program designed to promote health and fitness through weight loss. Although the program has been based on sound scientific rationale, the effects on psychological constructs in women have not been studied. The purpose of the this study was to evaluate the effects of the Curves program on body image, social physique anxiety and self-esteem in women.

Abstract

Body image can be defined as “an individual’s appraisal of and feelings about the body and its function” (Cornwell & Schmitt, 1995). It is a standard that influences the way people feel about themselves, the activities they engage in, and their perception about the future (O’Brien, 1980). While body image can affect people in daily life, it is not static—it changes as a result of age, behavioral experiences, physical appearance, societal norms and the reactions of other people (Pruziensky & Cash, 1990; O’Brien, 1980). Social physique anxiety (SPA), closely associated with body image, has been identified as the anxiety individuals experience in response to others’ evaluation of their physique (Hart, Leary, & Rejeski, 1989). Both body image perception and SPA have been shown to be associated with self-esteem in some populations.

With the rise of obesity in the United States, many individuals are facing issues related to body image and choosing to engage in weight loss programs in order to reduce body size. The Curves Program for Women is one such program designed to promote health and fitness through weight loss. Although the program has been based on sound scientific rationale, the effects on psychological constructs in women have not been studied. The purpose of the this study was to evaluate the effects of the Curves program on body image, social physique anxiety and self-esteem in women.

Experimental Design

Subjects

- 151 sedentary women participated in a 14-wk exercise and diet program.
- Subjects were informed as to the experimental procedures and signed informed consent statements in accordance with the human subjects guidelines with Baylor University.
- Experimental Design
- Subjects participated in a supervised 30-min hydraulic resistance training circuit program that was interspersed with calisthenic exercises and performed 3-d per week.
- Subjects were assigned to an exercise and no diet group, an exercise and high caloric diet group, or one of three low caloric diet groups that involved consuming 1,200 kcal for 2 wks and 1,600 kcal for 6 wks. Subjects then ingested 2,600 kcal and 1,200 kcal diets at 3/2, 3/2, 5/2 & 10/2 day intervals to maintain weight loss.
- Body composition, the Social Physique Anxiety (SPA) scale, a Rosenberg self-esteem scale (RSE), and a Cash Body Image Questionnaire were obtained at 0, 10, and 14 wks.
- Data were analyzed by repeated measures ANOVA and Pearson product correlation analysis. Data are presented as means ± SD changes from baseline for 10 and 14 wks, respectively.
- Results revealed that appearance evaluation (AE) 28.2±34; 28.2±38 %), body area satisfaction (BAS) 4.7±28; 5.5±34 %), and overweight preoccupation (OP) 20.1±31; 17.8±34 %) significantly increased during the study while appearance orientation (AO), RSE, Self-Classified Weight (SCW), and SPA scores were unchanged.
- Changes in fat positively correlated with SCW and negatively correlated with BAS while changes in percent body fat positively correlated with SPA and SCW while negatively correlating with AE and BAS.
- Results indicate that the Curves program improves some aspects of body image and that changes are correlated with body composition alterations.

Conclusions

- The findings from this study indicate that the Curves health and fitness program has a positive effect on appearance evaluation (feelings of physical attractiveness), body area satisfaction (satisfaction with discretely aspects of one’s appearance) and overweight preoccupation (weight vigilance, dieting) of women who participate in the program.
- Further studies should be conducted to examine the reasons for lack of significant changes in SPA and self-esteem.

Funding

Supported by the Exercise & Sports Nutrition Laboratory, Baylor University, and Curves International Inc., Waco, TX.

Statistical Analysis

Data were analyzed by repeated measures ANOVA and Pearson product correlation analysis using the SPSS statistical program. Data are presented as means ± SD changes from baseline for 10 and 14 wks, respectively.

Effects of the Curves™ Fitness and Weight Loss Program VIII: Body Image

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ANALYSIS OF THE SAFETY OF THE CURVES™ FITNESS AND WEIGHT LOSS PROGRAM HIGH PROTEIN DIETS


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Abstract

PURPOSE: Ketogenic diets are believed to promote weight loss by suppressing appetite, promoting lipolysis, sparing muscle mass, and maintaining energy expenditure. However, these diets have been criticized because some fear they may lead to excessive elevations in ketone bodies, increase kidney and liver stress, promote calcium and bone loss, and/or increase blood lipids. This study examined the effects of following the Curves moderate and high protein diets on ketone production, markers of renal and liver function, and blood lipids.

METHODS: 154 sedentary women (38.8±8 yr; 94.3±19 kg; 43.8±5.5 % body fat) participated in a 14-wk exercise and diet program. Subjects were assigned to an exercise and no diet group (E+ND); an exercise and high mixed calorie diet group (HCD); or, a low calorie high carbohydrate diet (HCHO) or very high protein (VHP) diet. The diets involved consuming 1,200 kcal/d for 2-wks followed by ingesting 1,600 kcal/d for 8 wks. Subjects then ingested 2,600 kcal and 1,200 kcal diet at 3/2, 3/2, 2/2, & 1/10 day intervals, respectively, in an attempt to maintain weight loss. Diets were standardized with 30% dietary fat with carbohydrate intake ranging from 40-55% on the HCD and HCHO diets and protein intake ranging from 50-63% (~2.0 - 2.4 g/kg/d) on the HP and VHP diets. Subjects participated in a supervised Curves 30-min resistance training circuit program that was interspersed with calisthenic exercises and performed 3-d per week. At 0, 2, 10, 10.4 and 14 weeks, subjects donated fasting blood samples, had DEXA whole body bone density determined, and completed a food satisfaction inventory. Data were analyzed by repeated measures ANOVA and Pearson Product correlations.

RESULTS: Serum ß-hydroxybutyrate levels were not significantly increased from baseline values in the HP and VHP diets by 518±88% and 54±8%, respectively, after two weeks of dieting at 1,200 kcal/d but returned to near baseline levels thereafter with no differences observed among groups at week 0, 2, 10, 10.4 or 14. Significant interaction effects were observed among groups in creatinine, BUN, uric acid, total protein, AST, ALT, GGT, LDH, GGT, total cholesterol, HDL, LDL, calcium, alkaline phosphatase, or bone mineral content among groups. Changes in ß-hydroxybutyrate at 2-weeks significantly correlated with changes in weight (r=0.24, p=0.002), leptin (r=0.18, p=0.05), glucose (r=0.17, p=0.05), and hunger (r=-0.16, p=0.04). CONCLUSION: The moderate and high protein Curves diets appear to be well tolerated and do not adversely affect health status of this subject population.

Rationale

The Curves fitness and weight loss program has become a very popular means of promoting health and fitness among women. The program involves a 30-minute circuit training program and a weight management program involving periods of moderate caloric restriction (1,200 to 1,600 calories per day) followed by short periods of higher caloric intake (2,600 calories per day). The program is designed to promote a gradual reduction in body fat while increasing strength and fitness. Although the program has been based on sound rationale, the effects of following this program have not been studied. The purpose of this study is to examine the safety of the adhering to the Curves high protein diets in sedentary overweight females.

Experimental Design

Subjects

154 sedentary women (38.8±8 yr; 94.3±19 kg; 43.8±5.5 % body fat) participated in a 14-wk exercise and diet program. Subjects were informed as to the experimental procedures and signed informed consent statements in adherence with the human subject’s guidelines of Baylor University.

Diet Protocol

Based on baseline testing, subjects were randomly assigned to one of the following groups:

- an exercise and no diet group (ND+E);
- an exercise and mixed calorie diet group (MCD+E) consuming 2,600 kcal/d for 2 wks at 55% C, 15% P, 30% F; 8 wks at 40% C, 30% P, 30% F; 4 wks at 55% C, 15% P, 30% F (HCD+E);
- a low calorie high carbohydrate diet (HCHO+E); or,
- a low calorie very high protein diet (VHP+E).

The diets involved consuming 1,200 kcal/d for 2-wks and 1,600 kcal/d for 8 wks. Subjects then ingested 2,600 kcal/d and 1,200 kcal diet at 3/2, 3/2, 2/2, & 1/10 day intervals in an attempt to maintain weight loss and REE.

Diets were standardized with 30% dietary fat with carbohydrate intake ranging from 40-55% on the HCD+E and LC-HCHO+E diets and protein intake ranging from 50-63% (2.0 - 2.4 g/kg/d) on the HP and VHP diets. Subjects participated in a supervised Curves 30-min resistance training circuit program that was interspersed with calisthenic exercises and performed 3-d per week.

Changes in ß-hydroxybutyrate at 2-weeks significantly correlated with changes in weight (r=0.24, p=0.002), leptin (r=0.18, p=0.05), glucose (r=0.17, p=0.05), and hunger (r=-0.16, p=0.04). CONCLUSION: The moderate and high protein Curves diets appear to be well tolerated and do not adversely affect health status of this subject population.

Statistical Analysis

Data were analyzed by repeated measures ANOVA and Pearson Product correlation analysis using SAS for Windows version 8.2 software (Cary, NC) and are presented as means ± SD from baseline for each diet group.

Results

The HP and VHP diets resulted in a significant increase in serum ß-hydroxybutyrate levels 56±8% and 54±8%, respectively, following two weeks of dieting.

Despite the significant elevations, the serum ß-hydroxybutyrate levels did not significantly interact with the observed variables creatinine, BUN, uric acid, total protein, AST, ALT, GGT, LDH, GGT, total cholesterol, HDL, LDL, calcium, alkaline phosphatase, or bone mineral content among groups.

Conclusions

The data from this study suggests that the moderate (HP) and high protein (VHP) used by Curves International, Inc. appears to be well tolerated and do not adversely affect health status of this subject population.

Funding

Supported by the Exercise & Sport Nutrition Laboratory, Baylor University and Curves International, Inc., Waco, TX

Sponsored by Curves International, Waco, TX